REMARKS

The Office Action objected to informalities in the drawings and the claims. The drawings and the claims have been amended. Withdrawal of the objection is requested.

The Office Action also rejected claims 1-20 under Section 102(b) as anticipated by Nolan (USPN 5,619,430). Nolan relates to a microcontroller with an on-chip temperature sensor, used in conjunction with the A/D converter, to monitor the temperature of the microcontroller. The temperature sensor generates and uses a differential voltage that is obtained across the base-emitter functions of two compatible bipolar transistors having dissimilar emitter areas. This differential voltage is proportional to temperature and may be sampled by the A/D converter to obtain a digital count indicative of the temperature of the microcontroller.

However, the Nolan reference (5619430) fails to disclose a method for compensating for oscillator variations due to the effect of temperature. It shows a sensor for monitoring the temperature of a charging battery, in order to optimize the charging process. It does not address the effect of temperature on INTRINSIC chip and transistor properties like mobility and threshold and their effect in changing the frequency of an on-board oscillator. In contrast, the present invention achieves a highly stable and predictable oscillation frequency INDEPENDENT of the outside temperature conditions, whereas Nolan seeks to RESPOND to outside temperature by changing the charging rate.

The Office Action points to item 108 of Fig. 3 as showing the claimed register coupled to the voltage sensor and the temperature sensor, the register adapted to concatenate the digital voltage output and the temperature output into an address output. However, Nolan's register 108 is a capture register. The sole description of this register is as follows:

> In operation, each analog channel is converted to a digital count independently by selecting one of the plurality of analog inputs via mux 32. A conversion takes place by first resetting counter 106 and register 108 while simultaneously discharging external capacitor 104 to ground for a predetermined minimum time of, for example, 200 microseconds. Reset is then released and counter 106 begins counting at the same time capacitor 104 begins to charge based upon the charging current supplied by DAC 102. It

is worth noting that the amount of time required for discharging capacitor 104 does not have to be exact due to the capability of microcontroller 10 to cancel the effects of an indeterminate, non-zero capacitor voltage that may result at reset. Likewise, it is not critical that the counter begins counting at exactly the same time as capacitor 104 begins charging. When the voltage across external capacitor 104 exceeds the voltage of the selected analog input, comparator 101 switches from a logic high to a logic low. This transition initiates an interrupt to microcontroller core 12 whereby an interrupt control signal causes a capture event to occur by latching (capturing) the count of counter 106 into capture register 108. The count stored in register 108 represents the time that it took for capacitor 104 to charge up and exceed the selected analog input voltage and corresponds to voltage measurement of the selected analog input. This count is then used to obtain a more precise voltage measurement for the analog input selected by using unique calibration procedures and filter algorithms as will now be described. In a similar manner, a digital count for each analog input may be obtained by independently selecting each analog input via mux 32 thereby digitally measuring the voltage of each of the plurality of analog inputs.

As shown above, there is no teaching where the register is adapted to **concatenate the digital voltage output and the temperature output into an address output**. Hence, at least this element is missing in Nolan. Since a Section 102 Rejection requires that EACH and EVERY limitation be found in the reference, Nolan cannot anticipate the claims.

Moreover, Nolan does not show the claimed corrective vectors. The Office Action points to a calibration procedure mentioned in Nolan as follows:

> Calibration Procedure
> In order to make the measurements of the selected analog inputs more precise, the present invention utilizes a unique calibration procedure as will now be described. Generally, a minimum set of parameters will need to be adjusted or "trimmed" during testing whereby calibration constants will be calculated and stored into EPROM user space. These minimum set of parameters that require trimming include the ratio of the lower slope reference voltage to the upper slope reference voltage of the slope A/D converter, the bandgap voltage, the internal temperature sensor (thermistor) voltage, and selected oscillator frequencies. Accordingly, the present invention measures these parameters during testing and calculates calibration constants, as set forth below, all of which will be stored in EPROM 20 user space for subsequent retrieval and use whereby many of these constants will be used increasing the accuracy of A/D measurements more accurate.

However, the Nolan calibration procedure is absolutely devoid of corrective vectors. In the present invention, the system needs corrective vectors in memory to achieve a predictable and correctable ABSOLUTE oscillation frequency, so the system digitally corrects the oscillation clock using analog data from the temperature sensors. Nolan uses a DAC and a microprocessor to adjust the charging current of his charger - Nolan does not attempt to change the oscillation frequency of the processor clock. He assumes that the change induced by the temperature change is not large enough to cause a problem with the microprocessor operation which is true for his charger but is not true for a wireless transceiver. Nolan does not correct for temperature effects on the chip, only for temperature effects on the battery.

There is absolutely no showing of an integrated circuit with both voltage sensor and temperature sensor on the integrated circuit. There is no showing of the registers concatenate the digital voltage output and the temperature output into an address output. Additionally, there is no showing of corrective vectors. Each of the foregoing is an independent basis for traversing the Section 102 rejection on the independent claims.

As to the dependent claims, these claims are allowable since they depend from allowable independent claims.

In sum, it is respectfully requested that the § 102 rejection of independent claims 1 and 11 (and those dependent therefrom) be withdrawn and the claims be allowed.

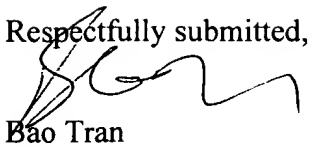
CONCLUSION

Applicant believes that the above discussion is fully responsive to all grounds of rejection set for the in the Office Action.

A check covering a time extension request is enclosed. Please charge any required small entity fees to Deposit Account 501861.

If for any reasons the Examiner believes a telephone conference would in any way expedite resolution of the issues raised in this response, the Examiner is invited to telephone the undersigned.

Respectfully submitted,



Bao Tran